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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/950,067	09/12/2001	Ronald H. Nickel	CNA-101	1547
28970	7590	11/10/2004	EXAMINER	
SHAW PITTMAN IP GROUP 1650 TYSONS BOULEVARD SUITE 1300 MCLEAN, VA 22102			HO, THE T	
			ART UNIT	PAPER NUMBER
			2126	
DATE MAILED: 11/10/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/950,067

Applicant(s)

NICKEL ET AL.

Examiner

The Thanh Ho

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-72 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-72 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/25/2002.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the application filed 9/12/2001.
2. Claims 1-72 have been examined and are pending in the application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-12, 15-42, 44, 46-48, 50-51, 54 and 57-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over D'Souza U.S Patent No. 6,446,218.

As to claim 1, D'Souza teaches a method for solving a computationally intensive problem (transaction requests from the from the users, line 1 column 13; 210, Fig. 2) using a plurality of multipurpose computer workstations (business logic servers, line 40 column 12), comprising:

building a system (clustered computer system 202, lines 20-21 column 9) comprising a master computer (business logic intelligent director agent 240, lines 30-31 column 12) and at least one slave computer (servers 216, 218, 220, and 222, Fig. 2), wherein the at least one slave computer is selected from the plurality of multipurpose computer workstations (...servers to be loaded with the uncertified business logic modules in this case may be new servers that are installed locally with the cluster or

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servers that are remote to the cluster but are registered with the local IDA for receiving and servicing transaction requests for the purpose of providing redundancy during software upgrade..., lines 39-44 column 16),

starting a master application on the master computer (software modules running within the business logic intelligent director agent 240, Fig. 3),

starting a slave application on the at least one slave computer (...business logic modules, i.e., application software modules..., lines 44-45 column 9);

dividing the computationally intensive problem into a plurality of task quantum (...the business logic intelligent director agent receives multiple requests from the clients, web servers, and divides the work load among the business logic servers..., line 44 column 10 to line 4 column 11),

assigning to the at least one slave computer at least one task quanta selected from the plurality of task quantum (...the decision pertaining to which business logic server to assign may be made based on the current relative load levels on the respective business logic servers, the information pertaining to which is periodically received by business logic IDA 240 from the business logic servers through path 242..., lines 57-62 column 10);

completing on the at least one slave computer the at least one task quanta (the business logic server services the user's transaction request, lines 26-32 column 11),

receiving on the master computer a result provided by the at least one slave computer (results returned from the servers 216, 218, 220 and 222 to the business logic intelligent director agent 240, Fig. 2);

repeating steps until the computationally intensive task is solved (...after load balancing is performed, the method returns to step 1002 to continue to monitor the load level information on the servers to ascertain whether load balancing has addressed the server stress problem. Preferably, some time should be allowed to permit the routing mechanism to distribute the load among the reconfigured servers of the cluster before load balancing is performed again..., lines 59-66 column 24).

D'Souza does not explicitly teach the system is a virtual supercomputer. However, the system of D'Souza is a combination of multiple computers that are used together to process requests (lines 22-67 column 24). These computers are combined into one system that performed load balancing regarding transaction requests from the users. Therefore one of ordinary skill in the art would conclude that together the computers of D'Souza made up a virtual supercomputer because these computers working together to accomplish a large task, which is balancing out the workload of servicing transaction requests.

As to claim 2, D'Souza as modified further teaches the master computer and the slave computer are the same computer (lines 36-45 column 1).

As to claim 3, D'Souza as modified further teaches balancing a load on the virtual supercomputer (load balancing is performed only among servers, lines 55-59 column 24).

As to claim 4, D'Souza as modified further teaches detecting an event affecting a size of the virtual supercomputer (the machine publishes its presence to the cluster to signal its ability, line 66 column 1 to line 2 column 2) and balancing a load on the virtual

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supercomputer in response to the event (...each time a machine is connected to the cluster, it publishes its presence to the cluster to signal its ability to share the processing load. Thus, as the processing load increases or decreases, the number of computers in the cluster may be correspondingly increased or decreased to meet the need of the changing processing load..., line 66 column 1 to line 5 column 2).

As to claim 5, D'Souza as modified further teaches the event comprises an availability of a second slave computer (the machine publishes its presence to the cluster to signal its ability, line 66 column 1 to line 2 column 2).

As to claim 6, it is a method claim of claims 1 and 4-5. Therefore, it is rejected for the same reasons as claims 1 and 4-5 above. D'Souza as modified further teaches determining a processing capability for the slave computers (...the decision pertaining to which business logic server to assign may be made based on the current relative load levels on the respective business logic servers, the information pertaining to which is periodically received by business logic IDA 240 from the business logic servers through path 242..., lines 57-62 column 10).

As to claim 7, D'Souza as modified further teaches a failure of the slave application on the slave computer (the uncertified business logic module or the server on which it is implemented crashes, lines 10-11 column 17).

As to claim 8, D'Souza as modified further teaches restarting the slave application on the slave computer and testing the restarted slave application on the slave computer (the transaction may be executed again using the cached data

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pertaining to the transaction using another certified business logic module, lines 14-16 column 17).

As to claim 9, D'Souza as modified further teaches a loss of communications between the master computer and the slave computer (the uncertified business logic module or the server on which it is implemented crashes, lines 10-11 column 17).

As to claim 10, D'Souza as modified further teaches removing the at least one slave computer from the virtual supercomputer (...If the uncertified business logic module or the server on which it is implemented crashes, the uncertified business logic module that failed is removed from the cluster..., lines 10-19 column 17);

determining which task quantum selected from the plurality of task quantum have not been completed (the transaction request currently underway..., line 12 column 17);

determining a processing capability for any remaining slave computers in the virtual supercomputer (lines 36-57 column 16);

and distributing at least one uncompleted task quantum to the remaining slave computers according to the determined processing capability (...the transaction request currently underway may be completed by the certified business logic that runs the transaction concurrently or the transaction may be executed again using the cached data pertaining to the transaction using another certified business logic module..., lines 11-16 column 17).

As to claim 11, D'Souza as modified further teaches determining a processing capability for the slave computer (to which business logic server to assign may be made based on the current relative load levels on the respective business logic servers, lines

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57-60 column 10), and distributing the plurality of task quantum to the slave computer according to the determined processing capability (...once a business logic server having thereon the requisite business logic module to service the user's transaction request is assigned to service the incoming transaction request..., lines 26-29 column 11).

As to claim 12, D'Souza as modified further teaches collecting on the master computer a plurality of final performance statistics from the slave computer (304-316, Fig. 3).

As to claim 15, D'Souza as modified further teaches providing a result to the computationally intensive problem (results being sending back to the users' requests 210, Fig. 2).

As to claim 16, D'Souza as modified further teaches starting a first virtual supercomputer daemon application on the master computer (software modules running within the business logic intelligent director agent 240, Fig. 3),

identifying a potential slave computer selected from the plurality of multipurpose workstations (to which business logic server to assign may be made based on the current relative load levels on the respective business logic servers, lines 57-60 column 10),

downloading a second virtual supercomputer daemon application from the master computer to the potential slave computer (...loading the another module of the software program on the first suitable computer, registering the first suitable computer as a computer capable of servicing transaction requests pertaining to the software

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program after the another module of the software program is loaded onto the first suitable computer..., lines 40-45 column 7; lines 8-40 column 14);

starting the second virtual supercomputer daemon application on the potential slave computer (...business logic modules, i.e., application software modules..., lines 44-45 column 9);

establishing a communications session between the first virtual supercomputer daemon and the second virtual supercomputer daemon (...business server directory 304 may track information pertaining to the list of business logic servers available to the clustered computer system, their remote/local status, their certified/uncertified status..., lines 63-66 column 12).

As to claim 17, it is a method claim of claims 8 and 16. Therefore, it is rejected for the same reasons as claims 8 and 16 above.

As to claim 18, it is a method claim of claim 6. Therefore, it is rejected for the same reasons as claim 6 above.

As to claim 19, D'Souza as modified further teaches repeating steps until there are no more potential slave computers available among the plurality of multipurpose workstations (...tracking, using the first intelligent director agent, status of the software modules running on the first plurality of computers. If the fault tolerance level is below the predefined acceptable fault tolerance level, the method also includes searching for a first suitable computer among the first plurality of computers to load another module of the software program thereon..., lines 23-34 column 7).

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As to claim 20, it is a method claim of claims 6, 8, 16 and 19. Therefore, it is rejected for the same reasons as claims 6, 8, 16 and 19 above.

As to claim 21, D'Souza as modified does not explicitly teach the computationally intensive problem comprises optimization of a financial portfolio. However, D'Souza teaches (lines 21-29 column 29) the invention can be applied to other implementations. Therefore one of ordinary skill in the art would conclude the invention of D'Souza could be used to solve the problem of optimization a financial portfolio since optimizing a financial portfolio does present a computationally intensive problem as well known in the art.

As to claims 22-27, D'Souza as modified does not explicitly teach optimization of supply chain logistics, used in conjunction with a branch-and-bound approach to optimization, used in connection with large-scale simulations to reduce total run time, and network optimization problem. Note the discussion of claim 21 above for the reasons of using D'Souza's invention in solving other computationally intensive problems.

As to claim 28, D'Souza as modified further teaches the computationally intensive problem comprises database searching across a network of workstations (user requests 210 to database servers 252-256, Fig. 2).

As to claim 29, D'Souza as modified further teaches the computationally intensive problem comprises database mining across a network of workstations (...business logic intelligent director agent 240 also includes a data mining module 330, which receives the external historical profiles of past usage trends on the various

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business logic modules and/or business logic servers, and ascertains prospectively the load demand on the various business logic modules and/or business logic servers. Data mining module 330 may be implemented using a variety of available data mining methodologies..., lines 50-60 column 13).

As to claim 30, D'Souza as modified does not explicitly teach the computationally intensive problem comprises an image analysis program. Note the discussion of claim 21 above for the reasons of using D'Souza's invention in solving other computationally intensive problems.

As to claim 31, it is a method claim of claims 1 and 16. Therefore, it is rejected for the same reasons as claims 1 and 16 above.

As to claim 32, it is a method claim of claim 20. Therefore, it is rejected for the same reasons as claim 20 above.

As to claim 33, it is a method claim of claim 19. Therefore, it is rejected for the same reasons as claim 19 above.

As to claims 34-35, they are method claims of claim 17. Therefore, they are rejected for the same reasons as claim 17 above.

As to claim 36, it is a method claim of claims 4-7. Therefore, it is rejected for the same reasons as claims 4-7 above.

As to claim 37, it is a method claim of claims 7-8 and 10. Therefore, it is rejected for the same reasons as claims 7-8 and 10 above.

As to claim 38, it is a method claim of claims 8 and 10. Therefore, it is rejected for the same reasons as claims 8 and 10 above.

As to claim 39, it is a method claim of claim 10. Therefore, it is rejected for the same reasons as claim 10 above.

As to claims 40-41, they are method claims of claim 17. Therefore, they are rejected for the same reasons as claim 17 above.

As to claim 42, it is a method claim of claims 1, 4-5 and 9-10. Therefore, it is rejected for the same reasons as claims 1, 4-5 and 9-10 above.

As to claim 44, it is a method claim of claims 1, 5, 8, 12 and 16. Therefore, it is rejected for the same reasons as claims 1, 5, 8, 12 and 16 above.

As to claim 46, it is a method claim of claim 12. Therefore, it is rejected for the same reasons as claim 12 above.

As to claim 47, it is a method claim of claims 1 and 16. Therefore, it is rejected for the same reasons as claims 1 and 16 above.

As to claim 48, it is a method claim of claim 6. Therefore, it is rejected for the same reasons as claim 6 above.

As to claim 50, it is a method claim of claim 6. Therefore, it is rejected for the same reasons as claim 6 above.

As to claim 51, it is a method claim of claims 1 and 7-8. Therefore, it is rejected for the same reasons as claims 1 and 7-8 above.

As to claim 54, it is a method claim of claims 1 and 7-8. Therefore, it is rejected for the same reasons as claims 1 and 7-8 above.

As to claim 57, it is a system claim of claim 1. Therefore, it is rejected for the same reasons as claim 1 above.

As to claim 58, D'Souza as modified further teaches a local area network (local network 604, Fig. 6).

As to claim 59, D'Souza as modified further teaches a wide area network (remote network 606, Fig. 6).

As to claim 60, D'Souza as modified further teaches the Internet (connected to a larger network such as the Internet, lines 21-22 column 9).

As to claim 61, D'Souza as modified further teaches the master application receives periodic messages from the slave application and in response performs a load balancing procedure on the virtual supercomputer (...the decision pertaining to which business logic server to assign may be made based on the current relative load levels on the respective business logic servers, the information pertaining to which is periodically received by business logic IDA 240 from the business logic servers through path 242..., lines 57-62 column 10).

As to claim 62, it is a system claim of claims 4-6. Therefore, it is rejected for the same reasons as claims 4-6 above.

As to claims 63-72, they are system claims of claims 21-30, respectively. Therefore, they are rejected for the same reasons as claims 21-30 above.

4. Claims 13-14 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over D'Souza in view of Marquis U.S Patent No. 5,729,682.

As to claim 13, D'Souza as modified does not explicitly teach tearing down the virtual supercomputer. Marquis teaches a network system comprising a multiple

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computers executing network applications (lines 7-45 column 2) wherein the network connection is ended after the application is terminated from a client system. It would have been obvious to apply the teachings of Marquis to the system of D'Souza because by terminating the network connection, the client system can restore its original configuration as disclosed by Marquis (lines 7-45 column 2).

As to claim 14, Marquis further teaches terminating the application on the computers (network application has been terminated, line 2 column 9).

As to claim 43, it is a method claim of claims 12-13. Therefore, it is rejected for the same reasons as claims 12-13 above.

5. Claims 45, 49, 52-53 and 55-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over D'Souza in view of Hayton U.S Patent No. 6,799,209.

As to claim 45, D'Souza as modified does not explicitly teach terminating an application when receiving a response. Hayton teaches (lines 30-45 column 8) a system of communication between a client and a server (Fig. 1) wherein the server would terminate execution of an application when the server receives an inactive response from the client. It would have been obvious to apply the teachings of Hayton to the system of D'Souza because this allows the server to keep track of client's activities as disclosed by Hayton (lines 30-45 column 8).

As to claim 49, it is a method claim of claim 45. Therefore, it is rejected for the same reasons as claim 45 above.

As to claim 52, it is a method claim of claim 45. Therefore, it is rejected for the same reasons as claim 45 above.

As to claim 53, it is a method claim of claim 6. Therefore, it is rejected for the same reasons as claim 6 above.

As to claim 55, it is a method claim of claim 45. Therefore, it is rejected for the same reasons as claim 45 above.

As to claim 56, it is a method claim of claim 6. Therefore, it is rejected for the same reasons as claim 6 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to The Thanh Ho whose telephone number is (571) 272-3762. A voice mail service is also available for this number. The examiner can normally be reached on Monday – Friday, 8:30 am – 5:00 pm.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Any response to this action should be mailed to:

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- NON OFFICAL faxes should not be signed, please send to (571) 273 - 3762

TTH
October 19, 2004


MENG-ALT. AN
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